

DESCRIPTIONS OF NEW NON-MARINE SHELLS FROM
NEW ZEALAND.

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Read 11th January, 1907.

PLATE XXII.

1. *LAOMA* (s.s.) *PÆCILOSTICTA* (Pfr.), n.subsp. *CONICULA*.
Pl. XXII, Figs. 1, 2.

Shell small, dome-shaped, imperforate, radially finely costate, suture margined, last whorl keeled, with a columellar plait. Sculpture consists of close, rounded, flexuous, radiate plications, extending over the base; the latter is microscopically closely and finely spirally striate. Colour fulvous, with rather faint longitudinal ziczac bands of rufous; margins of suture and keel on the last whorl with whitish dots. Epidermis thin, shining. Spire dome-shaped, with a blunt rounded apex. Protoconch formed by $1\frac{1}{2}$ smooth, flatly convex whorls; a magnifying power of 100 diam. reveals faint spiral striation. Whorls 6, slowly increasing, flatly convex, as is also the base. Suture impressed, margined above on the last four whorls with a distinct thread. Aperture a little oblique, angularly lunate, breadth about twice the height. Peristome simple, straight, outer lip but little convex, forming a distinct angle with the slightly rounded basal lip. Columella callous, oblique, with a not much pronounced plait. Umbilical region showing but a faint impression, no perforation whatever, not even in young examples. Alt. 3.2, diam. 3 mm.

Hab.—One specimen, the type, I received some years back from Mr. Strickland, who collected shells in this colony for some time, and who found it near Kaihu, Hokianga. I also found specimens in the bush near Waiwera.

This subspecies is distinguished from *L. pæcilsticta*, of which for comparison the outlines are figured (Fig. 2), by the dome-like spire, the absence of an umbilicus, and the presence of very distinct spiral striation upon the base. Young specimens of *L. pæcilsticta* are distinctly umbilicated, but adult specimens have the perforation mostly more or less sealed up; spiral striation on the base is faintly visible only under a very strong lens. Type in my collection.

2. *LAOMA* (*PHRIXGNATHUS*) *FILICOSTA*, n.sp. Pl. XXII, Fig. 3.

Shell minute, turbinata, imperforate, fulvous with fuscous radial streaks and distant riblets. Sculpture consists of very fine and oblique flexuous costæ, about 8 to 10 per millim.; they are sharp, thin, membranous, white, and extending over the base to the umbilical region;

the interstices with numerous microscopic incremental striæ; base microscopically distantly spirally lirate. Colour fulvous, radially ornamented with ziczac bands of rufous at about the same distance apart as the riblets. Epidermis thin, not shining. Spire convexly conoidal, with a blunt and rounded apex. Protoconch formed by $1\frac{1}{2}$ smooth flat whorls, which are microscopically finely spirally striate. Whorls $4\frac{1}{2}$, slowly and regularly increasing, flatly convex, the last distinctly angled at the periphery, base rounded, umbilical region slightly impressed. Suture not deep. Aperture somewhat oblique, lunar; columella but little callous and extended over the umbilical region. Peristome sharp, straight. Alt. 1.25, diam. 1.75 mm.

Hab.—A few specimens were found by my son Alfred in a swampy kahikatea bush near Wairangi, Waikato.

The nearest allies to this species seem to be *L. Francesci* and *elaiodes*, Webster, though decidedly very distinct from it. *L. filicosta* is a lovely little shell and well characterized. Type in my collection.

3. FLAMMULINA (PHENACOHELIX) LEPTALEA, n.sp. Pl. XXII, Fig. 4.

Shell small, subglobular, fragile, translucent, umbilicated, closely costate. Sculpture formed by radial riblets, about 6 per millim. straight above, slightly sinuate on the periphery and extending to the umbilicus; the costæ are thread-like, sharp, the interstices with numerous fine growth-lines which are decussated by equally fine and close spiral lines. Colour light fulvous, with light ziczac markings of brown. Epidermis very thin, not shining. Spire broadly conoidal, with obtuse apex. Protoconch consisting of $1\frac{1}{2}$ smooth, convex whorls, microscopically finely and densely spirally striate. Whorls $4\frac{1}{2}$, convex, regularly increasing, the last indistinctly shouldered, and with the periphery slightly flattened; base rounded. Suture deeply impressed. Aperture vertical, lunate; peristome sharp and straight. Outer lip convex, basal lip somewhat flattened; columella subvertical, concave, a little callous and partly spread out over the umbilicus, which is moderate, deep, diameter .7 millim. Alt. 3.7 mm.; diam. maj. 4.5, min. 4 mm.

Hab.—The type was collected by Mr. Strickland at Kaihu, Hokianga. Waitakerei Range and Waiwera (H. S.).

This species is closely related to *F. Ponsoubyi*, Suter, but is smaller, much more globose and fragile, the colour-markings are generally of a different pattern, the riblets more distant, and the umbilicus a little narrower. Type in my collection.

4. FLAMMULINA (ALLODISCUS) COOPERI, n.sp. Pl. XXII, Figs. 5-7.

Shell small, orbicular, costate, imperforate, and with broad ziczac streaks. Sculpture consists of close radial and sharp costæ, very little sinuous, 6 to 7 per millim., interstices with very fine incremental lines which are crossed by indistinct fine microscopical spiral striæ. Colour fulvous with broad and distinct chestnut brown radiate streaks on the upper part of the whorls, forming anastomosing ziczac lines on the periphery and base. Epidermis thin, not shining. Spire low, broadly

convex. Protoconch of $1\frac{1}{2}$ smooth convex whorls, microscopically very indistinctly spirally lirate. Whorls $4\frac{1}{2}$, regularly increasing, convex, periphery sharply rounded, base flatly convex. Suture very distinct and well impressed. Aperture oblique, lunate; peristome sharp and straight; columella oblique, a little concave, with a feeble callus. Umbilical region not much impressed. Alt. 4 mm.; diam. maj. 7, min. 6.2 mm.

Hab.—Poor Knights Islands (Mr. C. Cooper).

This species stands nearest to *F. dimorpha*, Pfr., but is distinguished from it by its much smaller size and the closer riblets. It gives me much pleasure to unite the name of my friend Mr. Chas. Cooper, of Auckland, with the species. Type in my collection.

5. FLAMMULINA (ALLODISCUS) THOLOIDES, n.sp. Pl. XXII, Fig. 8.

Shell small, depressed turbinate, imperforate, costate, with brown ziczac bands. Sculpture consists of sharp, almost straight, and sub-equidistant radial riblets, 8 to 10 per millim., extending over the base, interstices with very fine growth-lines; no spiral sculpture. Colour fulvous with light-brown ziczac bands. Epidermis thin, not shining. Spire broadly dome-like, low. Protoconch of $1\frac{1}{2}$ smooth and convex whorls. Whorls 5, slowly and regularly increasing, convex, but slightly flattened above; base convex. Suture well impressed. Aperture a little oblique, lunar; peristome thin and straight; columella short, concave, slightly callous, and deflexed over the umbilical region, which is but little immersed. A thin callus on the body-whorl unites the distant margins. Alt. 3.2 mm.; diam. maj. 4.5, min. 3.8 mm.

Hab.—Cape Te Reinga (Mr. C. Cooper). I have also a specimen from Whangaroa.

The globular form and the distant, almost straight riblets distinguish this species from the allied *F. Tullia*, Gray, *F. venulata*, Pfr., and *F. rustica*, Suter. Type in my collection.

6. LAGOCHILUS CHILTONI, Suter, n.subsp. SEPTENTRIONALIS.

Pl. XXII, Fig. 9.

Distinguished from the species by the following characters:—It is considerably larger, the spiral striation is quite distinct, especially upon the base, and the umbilicus is a little larger and open, not covered over by the reflection of the inner lip. Alt. 4, diam. 3 mm. A specimen from Cape Camel is 4 by 2.8 mm.

Hab.—Cape Bay, Waiheke Island; type (H. S.). Cape Camel, west of North Cape (Mr. C. Cooper).

The specimens from Cape Camel are slightly more slender and the umbilical tract is angled in some examples. Type in my collection.

7. LAGOCHILUS BICARINATUS, n.sp. Pl. XXII, Fig. 10.

Shell small, turbinate, umbilicate, base bicarinate. Sculpture consists of fine subequidistant and blunt incremental axial striæ; two

carinæ on the base, the upper one arising from the junction of the outer lip with the whorl and terminating a little below the middle of the outer lip; the lower rib departs from the middle of the body-whorl between the margins of the mouth, and ends at the distal side of the basal lip; no microscopic spiral striation is present. Colour fulvous to brown. Epidermis thin, slightly shining; there may be axial membranous plaits, but in the only specimen before me they have evidently been lost. Spire conical, of the same height as the aperture; apex obtuse. Protoconch consisting of one whorl, which is globular and smooth. Suture deeply impressed. Aperture circular, peristome slightly reflexed and callous, but sharp; notch at the suture very indistinct; columella concave, partly concealing the umbilicus, which is deep and of about .5 millim. diameter, the umbilical tract immersed and margined by the lower carina. Operculum thin, circular, multispiral, with membranous outer and central processes. Alt. 5, diam. 4.5 mm.

Hab.—Kamo, near Whangarei (Mr. C. Cooper).

This is a very well characterized species, easily separated from all our other species of the genus. Type in my collection.

8. *DIPLODON MENZIESI*, Gray, n. subsp. *ACUTA*. Pl. XXII, Figs. 11, 12.

Distinguished from the species by the very distinctly rostrate posterior end, the nearly total absence of radial sculpture, and by being more compressed. Only young shells show traces of radially arranged nodules near the beaks. The basal margin is generally more straight than in typical *D. Menziesi*. The beaks are much corroded in all the specimens I have. The shell is rather thin, yellowish-brown, with strong concentric sculpture, approaching *D. rugata*, Hutton. The interior is nacreous olive, the hinge not different from that of the species. Alt. 40, long. 70, diam. 16 mm.

Hab.—Lake Omāpere, between Bay of Islands and Hokianga. The shells were collected by Miss Willis, of Ohāeawai, and kindly given to me by Archdeacon P. Walsh, of Waimate. To both of them my best thanks are due.

The outline of this subspecies is very nearly that of *D. depauperata*, Hutton, but the hinge is very different; it also has almost exactly the outline of *Anodonta complanata*, Ziegler, of Europe. Type in my collection.

Appendix.

Mr. Charles Cooper, of Auckland, submitted to my examination the land and fresh-water shells collected during a trip round the North Cape in the Government steamer "Hinemoa" in 1905, and the following table gives the geographical distribution of the various species obtained. Localities: 1, Little Barrier Island; 2, Poor Knights Islands; 3, Whangaroa Harbour; 4, Tom Bowlines Bay, east of North Cape; 5, Cape Camel, west of North Cape; 6, Te Reinga; 7, Kamo.

	1	2	3	4	5	6	7
<i>Lagochilus pallidus</i> , Hutton			x	x		x	
„ <i>Chiltoni</i> , Suter, subsp. <i>septentrionalis</i> , Suter					x		
„ <i>bicarinatus</i> , Suter							x
„ sp. near <i>torquillus</i> , Suter					x		
<i>Realia turriculata</i> , Pfeiffer						x	x
„ <i>carinella</i> , Pfeiffer			x				
<i>Potamopyrgus corolla</i> , Gld., subsp. <i>Salleana</i> , Fischer ..	x						
<i>Rhytida Greenwoodi</i> , Gray			x				x
„ <i>Duonia</i> , Gray			x				x
„ <i>duplicata</i> , Suter						x	
<i>Delos Jeffreysiana</i> , Pfeiffer	x		x		x		
<i>Flammulina Zelandiæ</i> , Gray							x
„ <i>Cooperi</i> , Suter		x					
„ <i>tholoides</i> , Suter			x	x	x	x	
„ <i>Kivi</i> , Gray			x	x			x
„ <i>Celinde</i> , Gray			x	x	x		x
„ <i>decidua</i> , Pfeiffer				x			
„ <i>tamora</i> , Hutton				x			
„ <i>Pomsonbyi</i> , Suter							x
„ <i>Ide</i> , Gray				x			
„ <i>Chiron</i> , Gray				x			x
<i>Laoma leimonias</i> , Gray							x
„ <i>sciadum</i> , Pfeiffer				x	x		
„ <i>Ariel</i> , Hutton	x				x		
„ <i>Phrynia</i> , Hutton							x
„ <i>allochroida</i> , Suter, subsp. <i>lucumbilicata</i> , Suter ...						x	
„ <i>Mællendorffi</i> , Suter							x
<i>Endodonta varicosa</i> , Pfeiffer				x	x	x	
„ <i>Coma</i> , Gray							x
„ <i>buccinella</i> , Reeve				x			
„ <i>corniculum</i> , Reeve					x		
„ <i>caput-spinulæ</i> , Reeve						x	
<i>Athoracophorus</i> sp., var. of <i>bitentaculata</i> , Q. & G. ...				x			

EXPLANATION OF PLATE XXII.

- FIG. 1. *Laoma pœcilsticta*, Pfr., subsp. *conicula*, Suter. 3·2 by 3 mm.
 „ 2. „ „ „ for comparison.
 „ 3. „ *flicosta*, Suter. 1·25 by 1·75 mm.
 „ 4. *Flammulina leptalea*, Suter. 3·7 by 4·5 mm.
 FIGS. 5-7. „ *Cooperi*, Suter. 4 by 7 mm.
 FIG. 8. „ *tholoides*, Suter. 3·2 by 4·5 mm.
 „ 9. *Lagochilus Chiltoni*, Suter, subsp. *septentrionalis*, Suter. 4 by 3 mm.
 „ 10. „ *bicarinatus*, Suter. 5 by 4·5 mm.
 FIGS. 11, 12. *Diplodon Menziesi*, Gray, subsp. *acuta*, Suter. 70 by 40 mm.